salting out, dialysis, filtration, concentration, fractional precipitation, ion-exchange chromatography, gel filtration chromatography, adsorption chromatography, isoelectric focusing chromatography, hydrophobic chromatography, reversed phase chromatography, affinity chromatography, gel electrophoresis and/or isoelectric focusing gel electrophoresis.

14. (Twice Amended) The process of claim 11, wherein the generated desert hedgehog protein of human origin is collected through immunoaffinity chromatography using a monoclonal antibody that recognizes a desert hedgehog protein of human origin.

Delete claim 5 in favor of the remaining claims, and add new claim 23 in its place as follows:

23. (New) The DNA of claim 21, which contains the whole of the nucleotide sequence of SEQ ID NO: 5 or its complementary nucleotide sequence.

REMARKS

The final Office Action, Paper No. 11, mailed August 6, 2002, has been carefully reviewed. Upon entry of the present amendment, the claims in the application will be new independent claims 20, 21 and 22 and amended versions of claims 2, 6, 7 and 11-14, as well as new dependent claim 23. These claims define patentable subject matter and should be

allowed. Accordingly, applicants respectfully request favorable reconsideration, entry of the amendment presented above, and allowance.

The typographical/clerical error appearing at page 4 of the specification is corrected by the amendment presented above.

Applicants note that the final action contains no rejection of claims 3 and 4. As claims 3 and 4 are in independent form, they should be formally allowed. Such is respectfully requested.

Claims 18 and 19 have been objected to under 37 CFR 1.75(c). These claims have now been deleted, whereby the criticism is no longer applicable.

Claims 2, 5-7 and 11-14, as well as claim 17, have been rejected under the first paragraph of Section 112. This rejection is respectfully traversed.

Claims 5 and 17 have now been deleted, and claim 2 has been amended to define the DNA of claim 20, which contains the whole of the nucleotide sequence of SEQ ID NO: 4 or its complementary nucleotide sequence. Furthermore, the DNA of claim 20 is an isolated DNA which encodes the desert hedgehog protein which has been allowed in the parent application. It

is therefore believed that the rejection to claim 2 as well as the rejections to claims 6-7 and 11-14 are overcome.

Applicants respectfully request withdrawal of the rejection.

Claims 11, 14 and 17 have been rejected under the second paragraph of Section 112. The rejection is respectfully traversed.

As claim 17 has been deleted, the rejection is no longer applicable to claim 17.

Claims 11 and 14 are amended to make clear that the hedgehog protein is a desert hedgehog protein which is generated by the expression of a DNA of claim 7, thereby obviating the rejections.

Applicants respectfully request withdrawal of the rejection.

Claim 17 has been rejected under Section 102 as anticipated by Drummond et al, Reference BC. This rejection is no longer applicable as claim 17 has been deleted.

As regards new claims 20-22, applicants believe that they do not raise any new issue because they are consistent with what applicants have claimed all along. Moreover, the format of these claims are consistent with claims 2-4 of the present application which were allowed in parent application

09/063,778. Under these circumstances, applicants believe that claims 20-22 define patentable subject matter and should be allowed.

Claim 2 has been amended to depend from claim 20 and new claim 23 has been added to depend from claim 21. (If the examiner will permit the presence of an additional claim, applicants would also like to submit a new dependent claim 24 corresponding to the subject matter of claim 4 dependent on claim 22.)

Claim 5 has been deleted. Claim 6 has been amended to depend from any one of claims 2-4 and 20-22, and minor amendments have been made in claims 7 and 11-14.

Applicants respectfully request favorable reconsideration, entry of the amendments presented above, and formal allowance of all the claims.

Respectfully submitted,

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Version with Markings to Show Changes Made

IN THE SPECIFICATION

Page 4, paragraph 6:

In FIG. 1, the symbol "HuDHH" indicates a DNA encoding the hedgehog protein of this invention; the symbol "Amp", an ampicillin-resistant gene; the symbol "pBR322ori", a replication origin exerting in Escherichia coli; ~~t he~~ the symbol "GST", a structural gene of glutathione S-transferase; and the symbol "Ptac", a Tac promotor.

IN THE CLAIMS

2. (Thrice Amended) ~~An isolated DNA which encodes a desert hedgehog protein of human origin~~The DNA of claim 20, and which contains the whole of the nucleotide sequence of SEQ ID NO:4 or its complementary nucleotide sequence.

6. (Amended) The DNA of ~~claim 1~~any one of claims 2, 3, 4, 20, 21 or 22, which is inserted into an autonomously replicable vector.

7. (Amended) The DNA of claim ~~1~~6, which is introduced into an appropriate host.

11. (Twice Amended) A process for producing a desert hedgehog protein of human origin, which comprises expressing a DNA of claim 7 ~~that encodes a desert hedgehog~~

~~protein of human origin~~ to generate said desert hedgehog protein of human origin, and collecting the generated desert hedgehog protein of human origin.

12. (Twice Amended) The process of claim ~~1~~1, wherein the DNA which encodes a desert hedgehog protein of human origin is expressed through culturing of a host cell transformed by introduction of said DNA.

13. (Amended) The process of claim 11, wherein the generated desert hedgehog protein of human origin is collected by one or more methods selected from the group consisting of salting out, dialysis, filtration, concentration, fractional precipitation, ion-exchange chromatography, gel filtration chromatography, adsorption chromatography, isoelectric focusing chromatography, hydrophobic chromatography, reversed phase chromatography, affinity chromatography, gel electrophoresis and/or isoelectric focusing gel electrophoresis.

14. (Twice Amended) The process of claim 11, wherein the generated desert hedgehog protein of human origin is collected through immunoaffinity chromatography using a monoclonal antibody that recognizes a desert hedgehog protein of human origin.